and

INDEX To Volume VIII

This index to Volume VIII of "Sky and Telescope" has been arranged to be as useful as possible as a reference guide to the issues. References by author and subject will be found. Authors' names are in italics, and articles are distinguished from subject references by initial capital letters and the inclusion of the author's name in the reference.

All books which have been reviewed are listed only under the heading, Books and the Sky.

Page references in italics indicate that the material is chiefly or entirely photographic. Other illustrative material may be found by referring to major articles on the subject.

Where a major article appears under a subject head, no attempt has been made to index the smaller parts of the subject covered by the article. Many such articles will be found to contain complete discussions.

An index to advertisers is appended.

Abrams, John W., book review, 286 Adler Planetarium, Planetarium Notes, all is-

Algol, minima of (current), all issues but Jan. and Sept.

Aller, Lawrence H., book review, 127 Amateur astronomers and societies

AAVSO, see American Association of Variable Star Observers
Amateur's Push-button Observatory, An, Da-

vid and Bertha Rotbart, 232

Astronomical League, see Astronomical

Boston ATM's, eclipse party, 162 Chicago, Ill., Burnham, meetings, various

issues

China, Star Club for Young Chinese, 168
Cleveland, Ohio, CAS, meetings, various issues; star party, 246; Junior Astronomy Club, 172; Specifications for a Beginner's Telescope, Frank A. Myers, 288; Telescopes for Juniors, Frank A. Myers, 282
Columbus, Ohio, 65; meetings, 17, 313

Columbus, Ohio, 65; meetings, 17, 313 Denver, Colo., new group, 225 Detroit, Mich., A. S., meetings, various i

sues; sponsor of photography contest, 44, 179

Duluth, Minn., 65; meeting, 44 Eastern Telescope Makers Association, 146 Ft. Worth, Tex., junior astronomers, 17

Geneva, Ill., meetings, various issues Germany, amateur publication, Munich, 165; planetary observing, 40 Greensboro, N. C., 65

Here and There with Amateurs, 79, 186, 285 Indianapolis, Ind., meetings, all issues; technical section, 225

Kalamazoo, Mich., meetings, various issues Los Angeles, Calif., 249; convention, see western convention, below; meetings, various issues

Madison, Wis., general program, 17; meetings, various issues

Messier Club, 17

Minneapolis, Minn., meetings, various issues New Haven, Conn., meetings, various issues New York, AAA, meetings, various issues; schedule of classes, 313; JAC, meetings,

various issues Philadelphia, Pa., Rittenhouse, meetings, various issues

Pittsburgh, Pa., lecture course, 17; meetings, various issues; observers club, 146; star party, 313

Pontiac, Mich., meetings, various issues; memorial fund, 318

Amateur astronomers and societies-continued

ogram for, 138

RASC, Montreal Centre, Messier Club, 17; occultation observing, 321; star party, 249

Rochester, N. Y., meetings, 94, 118
Roselle Park, N. J., new group, 225
Sacramento, Calif., 281; exhibits, 45, 281; meeting, 313; observing party, 17
St. Paul, Minn., meeting, 225
San Diego, Calif.

San Diego, Calif., meetings, various issues

Skyscrapers observatory, 224 Stamford, Conn., meetings, various issues; officers, 17

Washington, D. C., junior publication, 41; meetings, various issues; observation nights, 172

West Essex Astronomical Association, 146 western convention, 224; Western Amateurs' Conference, Charles J. Schopke and Carl Anderson, 309

Youngstown, Ohio, 16-inch reflector, 262 Ambarzumian, V. A., 217 American Association of Variable Star Observ-

ers, 94

Annual Meeting of the AAVSO, The, H. S .-

F., 44
Fifty Years at HCO, Margaret Harwood, 191
spring meeting at Providence, 147; Variable
Star Observers Hold Spring Meeting, 224

38th annual meeting, 313 American Astronomers Report, 96, 122, 148, 254, 279, 306

American Astronomical Society — patrons elected, 97

80th meeting (New Haven), 37, 96; papers from, 96, 122, 148

81st meeting (Ottawa), 198, 254; papers from, 254, 279, 306 Anderson, Carl, and Charles J. Schopke, West-

ern Amateurs' Conference, 309
Aratus—The Man Who Made the Constellations Famous, L. S. Copeland, 38
Armagh-Dunsink-Harvard reflector, 43
Asteroids—Baade's object, New Asteroid with

Smallest Mean Distance, The, Robert S. Richardson, 271; elements, 273; positions, 273

designation of, 9 Eros and solar parallax determinations, 96

emblem, 195, 225

opposition of Vesta, 207 Astronomical Confusions (poem), Pauline F.

Paul. 69 Astronomical League-activities chairman, 147 Cleveland convention, 117, 146, 173, 194; Cleveland Convention, H.S.F. and C.A.F., 246; convention notes, 249

Astronomical League - continued

"Junior Regional Newsletter," 118

membership, 248 Middle East regional officers, 249

new members, 225, 248 North Central region, 117 Northeast region, 117; convention, 118, 146; Northeast Region Convenes at New York,

Northwest region, convention, 225, 281 officers, 248

Proceedings" of second convention, 118 program for, 138 Technical Advisory Council, 94

Wellesley convention, 249
Astronomy—Civil Service positions, 175'
historical—"Application" of Telescopes, The:
1667 or 1668?, J. W. Olmsted, 7; Korean
planisphere, 13; Man Who Made the Constellations Famous, The, L. S. Copelard, 38; Two Lunar Eclipses of 1948, The,

Alexander Pogo, 41 Popularizing Astronomy With a Portable Observatory, S. I. Gale, 220, 213 publications, see Publications

Some Astronomical Highlights of 1948, Har-

low Shapley, 42 Atkinson, R. d'E., 37, 59

Atmosphere—antipodal stations for ionospheric prediction, 196

high-altitude rocket flight, 165 investigations, 222; ozone ozonosphere shadow, 62

tides in, 78 upper atmosphere - and earth's magnetism,

278; and solar flares, 122, 307; X-rays in, 223

Atomic clock, 223 Atomic energy levels, table of, 223 Aurora — Oct. 1-2, 1948, 53 Jan. 24, 1949, 134

Australian crater, 161, 298; The Hidden Crater of Wolf Creek, Charles H. Holmes, 163 Auzout, Adrien, 7

B

Baade, Walter, 271 Baade's object, see Asteroids Back-cover photographs Baker super-Schmidt camera, 108 Coma-Virgo cluster of galaxies, 188 M81 in Ursa Major, 212 nebulosity around NGC 2244, Monoceros, 324

Orion nebulae, NGC 2024, 56; NGC 1977, 136; M43 and M42, 268 200-inch telescope, 28, 84, 169, 240

Baker, James G., super-Schmidt camera, 90, 108

Barrie, Susan, One Man's Telescope, 87 Bartlett, James C., Jr., An Apparent Temporary Change in Saturn's Color, 263 Bates, Ralph S., book review, 315

Bauer, Carl A., 6 Beals, C. S., 308

Beam-splitter mirrors, 125

Bee compass, 253 Big Dipper star trails, 88 Billion, definition of, 165

Billion, definition of, 165
Binary stars, see Double stars
Binnendijk, L., 148
Birds as "flying saucers," 40
Bjerknes, J., 78
Blackett, P. M. S., 62
Bogrand, William, 318
Back H. 149 Bok, Bart J., 148

Bonner Durchmusterung" revision, 113

Books and the Sky

Atlas Photometrique des Constellations, A.

Brun, C.A.F., 315
Atmospheres of the Earth and Planets, The,
Helen B. Pettit, 230
Astronomie, Rudaux and Vaucouleurs,

Simone Daro Gossner, 18 Astronomy, William Lee Kennon, John H. Pitman, 98

Centennial Symposia, Lawrence H. Aller, 127 Computation of Orbits, The, Paul Herget,

Computation of Orbits, The, Paul Herget, Fred L. Whipple, 126
Concise History of Mathematics, A, Dirk J. Struik, John B. Irwin, 150
Elements of Mathematical Astronomy, Martin Davidson, R. I. Wolff, 73
Engineering the New Age, John J. O'Neill, Lange Stelling, 202

James Stokley, 202 Face of the Moon, The, Ralph B. Baldwin,

Fred L. Whipple, 258
From Euclid to Eddington, Sir Edmund

Whittaker, Ralph S. Bates, 315
Geology Applied to Selenology, Part III, J.
E. Spurr, Roy K. Marshall, 72
History of the British Astronomical Association, The, Dorrit Hofflet, 177
Newton Tercentenary Celebration Helen

Newton Tercentenary Celebration, Helen

Sawyer Hogg, 74 Observer's Handbook for 1949, 47 Our Sun, Donald H. Menzel, W. A. Calder,

314 Practical Astronomy, Hosmer and Robbins, J.

Allen Hynek, 72 Practical Astronomy, Jason John Nassau, J. Allen Hynek, 72 Readings in the Physical Sciences, Shapley.

Wright, and Rapport, John Q. Stewart, 46

Science, Servant of Man, I. Bernard Cohen, John W. Abrams, 286 Stars Are Yours, The, James Sayre Pickering, C. H. Cleminshaw, 98 Sweeper in the Sky, Helen Wright, Ruth

Hayner, 151 Weather Elements, Thomas A. Blair, David

M. Ludlum, 202 Yankee Science in the Making, Dirk J. Struik, B. W. Sitterly, 176 Boston Museum of Science — eclipse party, 162

planetarium, 67 Bouton, T. C. H., 65 Bowen, Ira S., 178 Brasefield, C. J., 222 Brouwer, Dirk, 96

Brown, Earle B., editor, Gleanings for ATM's. all issues Brown, Harrison, 6

Buffalo Museum of Science Planetarium, 195 Planetarium Notes, June and ff. Buhl Planetarium, Planetarium Notes, all is-

Burwell, Cora G., 278

Calder, William A., book review, 314

Homemade Planetarium, A, 181
Calendar — Calendar for 4,000 Years, A, Edward T, Krach, 63
Calendar for the Moon, 174

Calvert School Planetarium, 68 Campbell, Leon, 189, 256

Fifty Years at HCO, Margaret Harwood, 191 Cancer, 2

Casady, P. M., Ball Spherometer, The, 260 Testing and Lap Making, 131

Cave, T. R., Jr., Advantages of a Long-focus

Reflector, 129

Celestial globe, see Star maps Chandrasekhar, S., 279

Cincinnati Observatory, 93

Circle, 95
Civil Service positions in astronomy, 175 Cleminshaw, C. H., book review, 98 Cleveland Convention, H.S.F. and C.A.F., 246

Clock, atomic, 223 Clusters, see Galactic clusters Comet(s) — abundance of, 61 Bappu-Bok-Newkirk, 253

coma, 61 d'Arrest, 320

development of, 308 Eclipse Comet of 1948, see 1948l, below Encke, 308 Great Comet of 1882, 33

Great Comet of 1948, see 1948l, below

Halley's, 12 Johnson, 222 naming of, 61 nucleus, 61 orbits, 95, 116 origin of, 196, 308 periods, 95

Pons-Coggia-Winnecke-Forbes, 9 review of all in 1948, 61

statistics, 37 superstitions, 12 tail, 61

19481, 30, 57, 110; diagram of orbit, 60; Eclipse Comet of 1948, The, 59

Congress in Switzerland, II, C.A.F., 8 Conic sections, origin of, 6 Conjunction, 103

Constellations - Cancer, 2

device for studying, 195
Man Who Made the Constellations Famous,

The, L. S. Copeland, 38
Copeland, L. S., Man Who Made the Constellations Famous, The, 38
Sixty Major Marvels of the Sky, 226 Cornell, Herbert W., Opposition of Vesta, 207 Cosmic rays -- heavy, 6

Nobel prize for work in, 62 Cosmology and cosmogony — model for a cluster of galaxies, 123 New Trends in Cosmogony, Otto Struve, 302

turbulence, 280 Crystallization - Laboratory Craters, S. I. Gale, 174 Cusp, 149

Davis Planetarium, 66
Planetarium Notes, March and ff.
Deep-Sky Wonders, Walter Scott Houston, all issues but Apr., Sept., and Oct. (correction, 82) de Kruiff, Leif M., Observations with a Small Reflector, 319

Dodson, Helen W., 122, 307 Dominion Observatory, 279 Double stars - Algol-type systems, 125

and gaseous envelopes, 63, 125 astrometric binary, GC 18985, 122 mass-luminosity discordances, 125 observing, 227; amateur programs, 247; by

Herschel, 121 orientation of, 63 second nearest star, 196 spectroscopic binary HD 193611, 96; HD Double stars - continued

UX Ursae Majoris, Albert P. Linnell, 166 W Ursae Majoris systems, 125 see also Stars Duncan, John C., 255

E

Earth - atmosphere, see Atmosphere earthshine, 149 ice ages from a nebula? 6 latitude variation — observatories, 9; plot of wandering of pole, 43 magnetic and geomagnetic equators, 278 north magnetic pole, 142 Earthquakes and eclipses, 196
Eccentricity, 95
Eclipses, see Moon and Sun
Edmondson, Frank K., Recent Developments
at the Goethe Link Observatory, 34 Ellipse, 95 Erro, L. E., 306 Evans, John W., 125

Extragalactic nebulae, see Galaxies

Feild, Talbot, A Sliding Tripod Mount, 234
Fels Planetarium — Dismantling a Zeiss
Planetarium, Roy K. Marshall, 31, 29
More About the Fels Planetarium Breakdown, Roy K. Marshall, 75; answer to
Dr. Marshall, 229 new director, 89
Planetarium Notes, all issues
Fernald, Cyrus F., 44
Films, see Motion pictures
Fireballs, see Meteors Fisher, Clyde, 89, 109 Clyde Fisher, Marian Lockwood, 111
Flying saucers, birds as, 40
Friend, Irving H., Novel Drives for Amateur
Telescopes, 48

Galactic clusters — evolution of, 123 Hyades and Pleiades, 207 observing, 226, 227 Stellar Associations, Otto Struce, 215 Galactic nebulae, see Nebulae Galaxies — cluster model, 123 colors of, 148 Coma cluster, evolution, 123 Coma-Virgo region, 185, 188; charts and lists of objects, 184, 208 Deep-Sky Wonders, all issues but Apr., Sept., and Oct. dynamics of, 62 emission objects in, 301 evolution of, 148 Inclinations of Spectrum Lines in Spirals, N. U. Mayall, 3 Milky Way, see Milky Way observing, 226, 227 reddening of, 148 Small Magellanic Cloud, long-period variables in, 306 spiral structure, 62 M81, Ursa Major, 190, 212 M83, 228

Gale, S. I., Laboratory Craters, 174 Popularizing Astronomy With a Portable Observatory, 220 Gaposchkin, Sergei, 96
Garnsey, Julian E., Painting the Eclipse of
the Moon, 199
Gascoigne, S. C. B., 278
Gebelein, Harry, An Indoor Telescope, 179 Geomagnetic — equator, 278 records and solar flare, 307 German amateur planetary work, 40 Gillotti, Frances J., and others, Trail Blazing with Spitz Planetariums, 66 Glaciation, see Earth

Glass, see Optical glass Gleanings for ATM's, edited by Earle B.

Brown, all issues; see under subjects,
authors, or Telescope making and Telescopes for subjects Globular cluster(s), 301 M22, 227 observing, 227

Goldberg, Leo, 124
Gossner, Simone Daro, book review, 18
Graphic Time Table of the Heavens—

Greek alphabet, 103 Greenstein, Jesse L., 149 Greenwich Observatory, 98-inch disk for Newton telescope, 223

Griffith Observatory and Planetarium, 310 Planetarium Notes, all issues Guided missiles, Optical Instrumentation for Guided Missiles, Dirk Reuyl, 299, 297

Halbach, E. A., 142 Halbach, Edward A., The Midwestern Fireball of July 22nd, 292 Hale telescope, see Palomar Observatory Hall, John S., 142, 274 Hall, John S., and John F. Jewett, A Simple DC Photometer for Photoelectric Photometry, 169

Halley's comet, see Comets
Harris, William P., report of Comet 19481, 59
Harvard Observatory, 192
Cannon memorial volume, 278

Jewett Schmidt camera, 185
Harvard Photographic Meteor Program, The,
Fred L. Whipple, 90, 108
Harwood, Margaret, Fifty Years at HCO, 191

Hayden Planetarium, Planetarium Notes, all

Hayner, Ruth, book review, 151 Hedeman, Ruth, 122 Herbig, George H., 308 Here and There with Amateurs, 79, 186, 285 Herschel, Caroline, 120

Herschel, Caroline, 120 Herschel, Sir William, He Broke Through the Barriers of the Skies, N. A. Mackenzie, 119

Hiltner, W. A., 142, 274

Hiltner, W. A., 142, 274
History of astronomy, see Astronomy
Hoffleit, Dorrit, 45
Hoffleit, Dorrit — book review, 177
News Notes, all issues
Hogg, Helen Sawyer, book review, 74
Holmes, Charles H., The Hidden Crater of
Wolf Creek, 163
Houston, Walter Scott, Deep-Sky Wonders, all
issues but Apr., Sept., and Oct.
Huey, Edward A., and others, Trail Blazing
with Spitz Planetariums, 66
Hynek, J. Allen, book reviews, 72
Hyperbola, 116

Hyperbola, 116

Ice ages, see Earth Ignatia, Sister M., I.H.M., An Etched Celestial Globe, 64

Globe, 64
Indiana University, see Link Observatory
In Focus — Coma-Virgo galaxy field, 185
Harvard Schmidt camera, 185
M81, Ursa Major, 190
NGC 2244 and nebulosity, Monoceros, 312
Orion, 45; NGC 1977, 113

Palomar Observatory, 190
200-inch Hale reflector—coude foci, 58;
declination trunnion, 58; north polar axis
bearing, horseshoe, and oil pads, 11;
phantom telescope, 228; right ascension drive and computer, 214; south polar axis bearing, right ascension drive, and yoke,

l'Institut pour la Recherche Scientifique en Afrique Centrale, 6 Institute of Meteoritics, University of New Mexico, 93

- Ball Spherometer, The, P. M. Instruments -Casady, 260

electronic plate-measuring machine, 280 Optical Instrumentation for Guided Mis-siles, Dirk Reuyl, 299, 297 sky-brightness photometer, 125

solar monochromator, 246 see also Planetariums, Telescopes International Astronomical Union, 42 Congress in Switzerland, II, C.A.F., 8 recommendations of commissions, 8 International observatory or laboratory, 42

Interstellar matter - polarization of starlight, 142, 222; Polarization of Starlight, Otto Struve, 274

transparency toward Cygnus, 148 turbulence in, 279
Ionosphere, see Atmosphere Irwin, John B., book review, 150

Japanese science, 125 Jewett, John F., and John S. Hall, A Simple DC Photometer for Photoelectric Photom-DC Photometer for Photoelect etry, 169
Johnson, E. L., 222
Johnson, Harold L., 280
Joyner, George F., Tile Tools, 76
Jungfraujoch scientific station, 11
Jupiter — satellites, 236

current positions, Nov., and July and ff. phenomena, July and ff. star occultation by Jupiter II, 247

Kearons, W. M., 65 Kirkwood Observatory, 36 Klepesta, Josef, 13 Kopal, Zdenek, A New Atlas of the Heavens, 13

Kovacs, W. J., A Springfield Telescope, 102 Krach, Edward T., A Calendar for 4,000 Years, 63

Kuiper, G. P., 253, 254

La Paz, Lincoln, 222 LaPelle, Rolland R. — Circular Secondary Supports and Reflector Resolving Power, 152 Magnitude Determinations of Saturn's Satellites, 80

Latitude variation, see Earth Letters, 2, 40, 75, 93, 138, 175, 229, 281, 298 Levitt, I. M., new director at Fels, 89

Lick Observatory, 197 spectrograph, 1, 4 120-inch disk, 301 Light, beam-splitter mirrors, 125 Limb, 149

Lindblad, Bertil, 62 Link Observatory - open nights, 313 Recent Developments at the Goethe Link Observatory, Frank K. Edmondson, 34 Linnell, Albert P., UX Ursae Majoris, 166 Little, Charles A., Jr., 37

Lockwood, Marian, Clyde Fisher, 111 Lourens, J. V. B., 89 Lower, Charles A., 65 Ludhe, Ernest T., and others, Trail Blazing

with Spitz Planetariums, 66

Ludlum, David M., book review, 202

Luyten, W. J., 165, 196

Lyons, Harold, 223

Luttleton P. A. 106

Lyttleton, R. A., 196

Mackenzie, N. A., He Broke Through the Bar-riers of the Skies, 119 Magnetic — equator, 278 fields in interstellar space, 222 pole, 142 Zeeman effect, 277

Marshall, Roy K., new director at Morehead,

Marshall, Roy K.—book review, 72
Dismantling a Zeiss Planetarium, 31
More About the Fels Planetarium Breakdown, 75

Morehead Planetarium, The, 243

Maunsell, C. D., 306

Mayall, N. U., Inclinations of Spectrum Lines
in Spirals, 3

McDonald Observatory, observing at, 222
McKinley, D. W. R., and Peter M. Millman,
Three-Station Radar and Visual Triangulation of Meteors, 114 (correction, 141) McMath, Robert R., 124

McMath-Hulbert Observatory solar film, 58 Menzel, Donald H., 6

Meteor craters - Meteor Crater, contracts, 93;

resolution concerning, 44; shape of, 62 possible crater in New Mexico, 165
Wolf Creek crater, 161, 298; The Hidden Crater of Wolf Creek, Charles H. Holmes, 163

Meteorites - check service, 125 composition, 6 Drum Mountain, Utah, 37

Institute of Meteoritics, University of New Mexico, 93

Norton achondrite, 42, 222 observed to fall, 142 Meteoritical Society, 253

Meteorology, international weather code, 142 Meteors — Delta Aquarids, 237 Eta Aquarids, 182

Eta Aquarids, 182 fireballs — Fireball Note — April 11th, Har-lan J. Smith, 206; frequency of occur-rence in February, 223; Midwestern Fire-ball of July 22nd, The, Edward A. Hal-bach, 292; June 5 fireball in southeast, 225; Sept. 1 fireball in south, 320 Geminids 52

Geminids, 52 Harvard Photographic Meteor Program, The,

Fred L. Whipple, 90, 108 Leonids, 26 Lyrids, 156 Orionids, 321 Perseids, 237, 265 Quadrantids, 80

radar—equipment, 37; observation, 9; Three-Station Radar and Visual Triangula-tion of Meteors, Peter M. Millman and D. W. R. McKinley, 114 (correction, 141) spectra, 254

telescopic, 307 Three-Station Radar and Visual Triangulation of Meteors, Peter M. Millman and D. W. R. McKinley, 114 (correction, 141)
Michigan Observatory disk to England, 223

Micrometer, early, 7 Microwave astronomy, 43 see also Radio astronomy Milky Way galaxy, 139 Cannon memorial volume, 278

concepts of, 248 Galactic Radio Waves, *Grote Reber*, 139 Herschel observations, 121

long-period variables in, 306

Millman, Peter M., 254
Millman, Peter M., and D. W. R. McKinley,
Three-Station Radar and Visual Triangula-

tion of Meteors, 114 (correction, 141) Minor planets, see Asteroids Mitchel, O. M., book by, 40, 93 Mohler, Orren C., 124 Moon, 174, 175

calendar for, 174

craters - Laboratory Craters, S. I. Gale, 174; origin of, 175

cusp, 149 eclipses - and earthquakes, 196; 41; Two Lunar Eclipses of 1948, The, Alexander Pogo, 41; Oct. 17-18, 1948, observations, 41; Apr. 12-13, 1949, 156, Aristarchus gleam, 319, Boston eclipse party, 162, Painting the Eclipse of the Moon, Julian E. Garnsey, 199, Somewhat Dark Eclipse, A, 200, Spica and the Total Eclipse of the Moon, Paul W. Stevens, 155; Oct. 6-7, 1949, 293, 319 appulse,

Moon - continued

filters for observing, 195 limb, 149

montage of moon sets, 174
Nodes of the Planets and the Moon, The,
Edward Oravec, 132 occultations, see Occultations

old moon in new moon's arms, 149 phases (current), all issues (correction to

104, 133) positions from solar eclipse observations, 37 star inside crescent moon, 198 terminator, 149

Moore, Joseph Haines, 165
J. H. Moore, A Good Neighbor, F. J. Neubauer, 197

Morehead Planetarium, 89, 241

Morehead Planetarium, The, Roy K. Mar-shall, 243

Planetarium Notes, July and ff.

Morgan, W. W., 306 Motion pictures — McMath-Hulbert solar film, 58

Story of Palomar, The, 94 Mount Palomar Observatory, see Palomar Observatory

Mount Wilson Observatory, 309

Myers, Frank A.—Specifications for a Begin-ner's Telescope, 288 Telescopes for Juniors, 282

N

Nail, Virginia McKibben, 306 Nassau, J. J., 306

National Geographic Society - Palomar Ob-

servatory Sky Atlas, 242
Navigation — by solar energy, 142
Sky Compass for Polar Navigation, A, 193
Nebula(e) — and radio energy, 149
Cygnus, 256, 257

dark, and ice ages, 6

Deep-Sky Wonders, all issues but Apr., Sept., and Oct.

extragalactic, see Galaxies

in red light, 255

nebulosity around NGC 2244, Monoceros, 312, 324

observing, 226 Orion, 45, 56, 113, 136, 256, 268

Sagittarius, 255, 256 Neptune, 254, 281

new satellite, 193, 254, 281
path of, 1949, 134
Neubauer, F. J., J. H. Moore — A Good
Neighbor, 197
Neugebauer, Otto, 6

New Atlas of the Heavens, A, Zdenek Kopal,

13, 14
"New General Catalogue," 238
News Notes, Dorrit Hoffleit, all issues; see under subjects and people for references

Nobel physics prize for 1948, 62 Northern lights, see Aurora Nova(e) — in Scorpius, 196 in Scutum, 281 Noyes, Frank I., 65

0

Observer's Page, all issues, see under authors and subjects for titles

Observing — Observations with a Small Reflector, Leif M. de Kruiff, 319

Popularizing Astronomy With a Portable Observatory, S. I. Gale, 220, 213

program on stars and bright planets, 298

Sixty Major Marvels of the Sky, L. S. Copeland, 226

Occultations, 178 current, all issues but Sept. observations of, 321

of star by planet, 178
used for solar parallax, 96
Oliver, Arleigh I., A Back-yard Observatory,
179

Olivier, Charles P., 307

Olmsted, J. W., The "Application" of Telescopes: 1667 or 1668?, 7

Olmsted, Margaret, 148

Omer, Guy C., Jr., 123

Open clusters, see Galactic clusters

Opposition, 103

Optical glass, 196 Optical Society of America, 95, 301 Oravec, Edward, Observer's Page material, all issues

Orbit, 95, 116

Orion, 45

nebulae, NGC 2024, 45, 56; NGC 1977, 113, 136; M43, 256, 268

Ozone shadow, see Earth

Palomar Observatory and 200-inch Hale tele-

computer, 214, 240 coude foci. 58

declination trunnion, 58, 84

dedication, 42

horseshoe bearing, 11, 28

north polar axis bearing, 11, 28 oil pads, 11, 28 phantom telescope, 228, 240

progress, current news, 58, 86, 190 refiguring mirror, 58, 86

right ascension drive, 145, 160, 214, 240

sky atlas, 242 snow in 1948-49, 142

south polar axis bearing, 145, 160 Story of Palomar, The (film), 94 test plates, 145, 190, 242; first Hale photo,

yoke, 145, *160* 48-inch Schmidt, *269*, 270, *296* Parabola, 116

Parmenter, B. C. - Planetary Telescope, A, 316

Solar Camera, A, 100

Patterson, Claire, 6

Paul, Pauline F., Astronomical Confusions (poem), 69

Pearce, J. A., 97 Penndorf, R., 62 Petrie, R. M., 306 Pettit, Helen B., book review, 230

Pfund sky compass, 193
"Phaenomena" of Aratus, The Man Who Made the Constellations Famous, L. S. Copeland,

Photoelectric plate-measuring machine, 280 Photoelectric photometry — equipment amateurs, 45

photoelectronic telescopes, 37 Simple DC Photometer for Photoelectric Photometry, A, John S. Hall and John F. Jewett, 169

Jewett, 169
sky-brightness photometer, 125
UX Ursae Majoris, Albert P. Linnell, 166
Photography — Detroit exhibit, 44; winner, 172
displaying photos, 2, 75
Eastman booklet on special plates, 116
emulsion for extreme UV, 165.
Mexican Montage, Francisco Velasco T., 174
Pictard, Abbe Jean, 7
Pitman, John H., book review, 98
Planetariums — Homemade Planetarium, A,
William A. Calder, 181
Planetarium Notes, all issues
projector — Dismantling a Zeiss Planetarium, Roy K. Marshall, 31, 29; More About
the Fels Planetarium Breakdown, Roy K. the Fels Planetarium Breakdown, Roy K.

Marshall, 75; answer to Dr. Marshall, 229 Trail Blazing with Spitz Planetariums, var-

ious authors, 66 see also individual planetariums

Planetary nebulae, 278 observing, 226

Owl, 227 Planets — configurations, 103 conjunction, 103 elongation, 103

Planets - continued

events in 1949, 80

filters for observing, 195

niters for observing, 195
German amateur observing, 40
Graphic Time Table of the Heavens, 70
meteorites and parent planet, 6
New Trends in Cosmogony, Otto Struve, 302
Nodes of the Planets and the Moon, The,
Edward Oravec, 132
observing, 247, 311; naked-eye program, 298
opposition, 103
planaerostic, 195

planacrostic, 195
positions of (current), all issues (correction
to page 82, 134)
quadratures, 103
symbols for, 103

see also individual planets

Planisphere, see Star maps Pogo, Alexander, The Two Lunar Eclipses of 1948, 41

Polarization — bee compass, 253 of starlight, 142, 222 Polarization of Starlight, Otto Struve, 274

Poles, wandering of, see Earth
Porter, Russell W., 137
lunar crater Porter, 206
R.W.P.—Telescope Artist, Leo and Margaret Scanlon, 143
Russet J. Hugh. Terminology Tells all issues

Pruett, J. Hugh, Terminology Talks, all issues Publication(s) — BD revision, 113 Cannon memorial volume, 278

exchange of, 278 list of observers and astronomers, 9

of observation and research, 8 of Newton letters, 9 of solar spectrum table, 9

Q

Quadrature, 103 Quito, Equador, radio broadcast scare, 142

R

Radio - antipodal stations for ionospheric

prediction, 196 broadcast scare, 142

Radio astronomy, 43

and meteors, see Meteors galactic radio energy, 149; Galactic Radio Waves, Grote Reber, 139

navigation by solar and stellar energy, 142 "Rare Astronomical Treatise, A," 40, 93

Reber, Grote, 307 Reber, Grote, Galactic Radio Waves, 139

Rensselaer open nights, 44 Research institute in Congo, 6

Research institute in Congo, 6
Reuyl, Dirk, Optical Instrumentation for
Guided Missiles, 299
Richardson, Robert S., The New Asteroid
with Smallest Known Mean Distance, 271
Rockets — emulsion for UV spectra, 165
high-altitude flight of V-2 — WAC Corporal,

Optical Instrumentation for Guided Missiles, Dirk Reuyl, 299

space travel problems, 253 see also V-2 Rotbart, David and Bertha, An Amateur's Pushbutton Observatory, 232 Russell lecture, 1949, 279

Saturn, 105

Saturn, 105
Apparent Temporary Change in Saturn's Color, An, James C. Bartlett, Jr., 263
observations by Herschel, 121
satellites — diagram, 81; ephemeris material, 81, 182; Magnitude Determinations of Saturn's Satellites, Rolland R. LaPelle, 80
Scanlon, Leo and Margaret, R. W. P. — Telescope Artist, 143

scope Artist, 143
Scholz, Grace C., The Story of Palomar in Color and Sound, 94

Schopke, Charles J., and Carl Anderson, Western Amateurs' Conference, 309 Schwarzschild, Martin, 149 Scientific research institute in Congo, 6 Seismology — earthquakes and eclipses, 196 Sen, Hari K., 142 Seymour Planetarium, Planetarium Notes, Seymour Planetarium, Planetarium Notes, March and ff.
Shapley, Harlow, 306
Shapley, Harlow, Some Astronomical Highlights of 1948, 42
Sights, early, The "Application" of Telescopes: 1667 or 1668?, J. W. Olmsted, 7
Signs and symbols, 103
Sitterly, B. W., book review, 176
Sitterly, Charlotte Moore, 223
Skalnate Pleso Atlas of the Heavens, 13, 14
Smith, Harlan J., Fireball Note — April 11th, 206 206 Solar system - Herschel observations of apex of sun's way, 121 New Trends in Cosmogony, Otto Struve, 302 Sommerfeld, Arnold, 142 Spectra and spectroscopy — atomic energy level data, 223 Inclinations of Spectrum Lines in Spirals, N. U. Mayall, 3, 1 of moon and sky in ozone investigations, 62 solar spectrum table, 9 ultraviolet extension of "Revised Multiplet Table," 223 Zeeman effect, 277 see also Stars, Sun
Spencer Jones, Sir Harold, 88, 96, 223
Spica and the Total Eclipse of the Moon,
Paul W. Stevens, 155
Spiral nebulae, see Galaxies Spitz Planetarium - Trail Blazing with Spitz Planetariums, various authors, 66 Spitzer, Lyman, Jr., 222 Stamford Museum Planetarium, 66, 68 Planetarium Notes, March and ff. Star maps - Etched Celestial Globe, An, Sister M. Ignatia, I.H.M., 64 Korean planisphere, 13 New Atlas of the Heavens, A, Zdenek Kopal, 13, 14 (correction to Atlas of the Heavens, northern, all issues Planisphere of Geruvigus, 39 southern, 55, 107, 159, 211, 267, 323 Stars—absolute magnitudes from H-gamma, 306 binary, see also Double stars bright, naked-eye observing program, 298 bright, naked-eye documents, see Star maps double, see also Double stars emission-line, 278, 308 GC 14544 (CPD -62°1643), 89, 125 Hartsening Russell diagram, The Two Hertzsprung-Russell diagram, The Two Fundamental Relations of Stellar Astron-omy, Otto Struve, 250 magnetic fields in, 43, 149 nearby star? GC 14544, 89, 125; second nearest star, 196 New Trends in Cosmogony, Otto Struve, 302 P Cygni stars, 308 Pleione, 148 polarization of starlight, 142, 222; Polarization of Starlight, Otto Struve, 274 radio energy from? 149 spectroscopic binary HD 193611, 96; HD 215835, 96 Stellar Associations, Otto Struve, 215 Trumpler stars, 96 turbulence, 279 Two Fundamental Relations of Stellar Astronomy, The, Otto Struve, 250 U Cephei gaseous envelope, 63 UX Ursae Majoris, Albert P. Linnell, 166 variable, see also Variable stars white dwarfs, 42, 165 see also Photoelectric photometry Sternenwelt," 165

Stevens, Paul W., Spica and the Total Eclipse of the Moon, 155

Stewart, John Q., 223 Stewart, John Q., book review, 46

Stokley, James, book review, 202

179 Calder, 181

Story of Palomar, The (film), 94 Struve, Otto, 63, 125 Struve, Otto — New Trends in Cosmogony, 302 Polarization of Starlight, 274 Stellar Associations, 215 Two Fundamental Relations of Stellar Astronomy, The, 250
— absolute magnitude, 278 carbon dioxide isotopes, 124
eclipses — Nov. 1, 1948, 37, and comet observations, 59; annular, May 8-9, 1948, report of, 165 122, 307 McMath-Hulbert solar film, 58 monochromator, 246 New Trends in Cosmogony, Otto Struve, 302 prominences, motion picture, 58 sky brightness photometer, 125 solar parallax - from Eros, 96; from occultations, 96 spectra — emulsion for UV spectra, 165; in-frared, 124; publication of spectrum table, 17ared, 124; publication of spectrum table, 9; ultraviolet from V-2, 89 sunspots, 219, 224, 245, 277; cycles, 224, 245, 312; early theories, 219; magnetism, 277; numbers, 245, 305; Pinhole Images of Sunspots, I. L. Thomsen, 51; zones, 277 turbulence, 279 X-rays from, 223 Sundials and origin of conic sections, 6 Swann, W. F. G., 6 Sweger, Paul B., Novel Drives for Amateur

Telescopes, 49 Switzerland, Congress in, II, C.A.F., 8 Symbols for planets, etc., 103 Symonds, Roy V., report on Comet 1948l, 60

T

Frank A. Myers, 288
Springfield Mount, A. W. J. Kovacs, 102
Telescopes for Juniors, Frank A. Myers, 282

Testing and Lap Making, P. M. Casady, 131

Advantages of a Long-focus Reflector, T. R. Cave, Jr., 129
"Application" of Telescopes, The: 1667 or 1668?, J. W. Olmsted, 7

tests for short-focus mirrors, 20 tools—Tile Tools, George F. Joyner, 76 turret eyepiece holder, 317

Armagh-Dunsink-Harvard reflector, 43 Baker super-Schmidt, 90, 108

Dirk Reuyl, 299, 297

Hale telescope, see Palomar Observatory

Optical Instrumentation for Guided Missiles,

Telescopes

satellites — fifth, 42, 43, named Miranda, 253; Titania and Oberon, 119 Telescope making —
Amateur's Push-button Observatory, An,
David and Bertha Rotbart, 232 V Back-yard Observatory, A, Arleigh J. Oliver, V-2 - and WAC Corporal high-altitude flight, Ball Spherometer, The, P. M. Casady, 260 Circular Secondary Supports and Reflector Resolving Power, R. R. LaPelle, 152 165, 253 solar spectra, 89 van der Waerden, B. L., 298 van Wijk, Uco, 123 Compound Reflecting Telescope, The, VII, Variable stars—Cepheids in Cygnus and in-terstellar reddening, 148 Allyn J. Thompson, 20 Herschel as a telescope maker, 119 Homemade Planetarium, A, William A. charts for, 9 maxima (current), all issues Indoor Telescope, An, Harry Gebelein, 179 Pleione, 148 R Coronae Borealis, 308 semiregular variable BD +20° 2337, 45 laps - for secondary, 20; lap making, 131; paper, 77, 317 Mounting for Telescope and Camera, A (Walter J. Semerau), 204 Spanish organization for observing, 238 see also Stars Velasco T., Francisco, Mexican Montage, 174 Novel Drives for Amateur Telescopes, Irving H. Friend, 48; Paul B. Sweger, 49
One Man's Telescope, Susan Barrie, 87, 85
Planetary Telescope, A, B. C. Parmenter, 316
R. W. P. — Telescope Artist, Leo and Margaret Scanlon, 143, 137 Venus, axis of rotation, 246 Vesta opposition, 207 Vienna Observatory, 50 Sidereal finder clock, 221
Simple DC Photometer for Photoelectric
Photometry, A, John S. Hall and John F.
Jewett, 169 WAC Corporal, see Rockets Wagman, N. E., 122 Sliding Tripod Mount, A, Talbot Feild, 234 Solar Camera, A, B. C. Parmenter, 100 Specifications for a Beginner's Telescope,

Telescopes — continued

photoelectronic, 37

short-focus refractors, 318

stations on Mt. Wilson, 253

Temperature scale revised, 253

Time — atomic clock, 223 broadcasting of signals, 10

year, length of, 62

Trillion, definition of, 165 Tukey, John W., 222

Transit, 178

Turbulence, 279

servatory

Universal time, 8, 26

path of, 1949, 134

Universal, designation, 8, 26

152

993

Terminator, 149

Reflector Resolving Power, R. R. LaPelle,

98-inch disk given to Greenwich Observatory,

120-inch disk for Lick, 301 200-inch telescope, see Palomar Observatory Television — in astronomy, 246

Terminator, 149
Terminator, 149
Terminology Talks, J. Hugh Pruett, all issues, see under topics for references
Thompson, Allyn J., The Compound Reflecting
Telescope, VII, 20
Thomsen, I. L., Pinhole Images of Sunspots, 51

Two-hundred-inch telescope, see Palomar Ob-

UNESCO, exchange of periodicals, 278

Upper atmosphere, see Atmosphere

Uranus — discovery, 119, 120

setting up a portable instrument, 220

Warner and Swasey Observatory open nights, 17, 65 Washburn, Bradford, and others, Trail Blazing with Spitz Planetariums, 66 Watson, Paul S., and others, Trail Blazing with Spitz Planetariums, 66 Weather, see Meteorology Western Amateurs' Conference, Charles J. Schopke and Carl Anderson, 309 Whipple, Fred L., 308
Whipple, Fred L., book reviews, 126, 258
The Harvard Photographic Meteor Program, Whitford, A. E., 148 Wolf Creek crater, 161, 298; The Hidden Crater of Wolf Creek, Charles H. Holmes, 163 Wolff, R. I., book review, 73 Wood, Harley, 37 Woolley, R. v.d.R., 278

Young Observatory, An Amateur's Push-but-ton Observatory, David and Bertha Rotbart, 232

Z

Zeiss planetarium projector — Dismantling a Zeiss Planetarium, Roy K. Marshall, 31, 29 More About the Fels Planetarium Break-down, Roy K. Marshall, 75; answer to Dr. Marshall, 229 Zodiac signs, symbols for, 103 Zwicky, Fritz, 37

INDEX TO ADVERTISERS

Appleton-Century-Crofts, Inc., 151
Astronomy Charted, 26, 52, 74, 99, 127, 151, 176, 203, 237, 265, 286, 319
Ballantyne, F. W., 26, 50, 78, 101, 131, 156, 180, 205, 238, 260, 294, 318
Blakiston Company, The, 230, 258, 287
Book Corner, The, 19, 72, 98, 127, 177

British Interplanetary Society, 78
Bushnell Importers, 290, 318
Chalfin, M., Optical Company, 77, 102, 130, 152, 179, 205, 235, 261
Clausing, Leroy M. E., 205, 234, 260, 291, 317
Cottone, A., and Company, 23, 50, 77, 78, 101, 105, 131, 132, 156, 179, 203, 238
DePalma Optical Co., 23, 48, 50, 78, 101, 131, 153, 156, 180, 204, 209, 234, 235, 261, 262, 294, 318
Dioptric Engineering Laboratories, 22, 49, 77. Dioptric Engineering Laboratories, 22, 49, 77, 101, 131, 154, 180, 207, 238, 262, 289, 316 Edmund Salvage Co., 21, 49, 75, 101, 128, 153, 181, 205, 233, 263, 284, 317 Farquhar Transparent Globes, 47, 73, 99, 127, 151, 177, 203

Farquhar Transparent Globes, 47, 73, 99, 127, 151, 177, 203
Goodwin, F. L., 234
Haines Scientific Instruments, 23, 51, 80, 103, 132, 182, 236, 289, 294
Harvard College Observatory, 46, 73, 99, 177
Holt, Henry, & Company, 18, 150
Hubbard, S. E., 72, 98, 127, 151, 177, 203
Jaegers, A., 22, 50, 78, 102, 130, 154, 180, 206, 234, 261, 291, 316
Macmillan, 150

234, 261, 291, 316
Macmillan, 150
Paulson, J. O., 22, 53, 77, 104, 129, 154, 181, 207, 234, 265, 294, 318
Precision Optical Supply Co., 22, 49, 77, 101, 131, 152, 179, 205, 234, 260, 290, 318
Quincy-Grossman Surplus Company, 292

Ronald Press Company, The, 126, 286 Ross, Harry, 20, 48, 76, 100, 110, 129, 138, 152, 162, 179, 190, 204, 214, 232, 242, 260, 270,

288
Royal Observatory, 74, 176, 286
Rumford Press, The, 46, 98, 151, 203
Science Associates, 19, 47, 72, 98, 127, 155, 176, 202, 233, 258, 291, 314
Scopemaster, J. M., 131, 156, 180, 209, 238, 261, 294, 318

Sky-Gazers Exchange, 27, 52, 82, 102, 130, 154, 185, 203, 235, 264, 290, 318
Sky Publishing Corporation, 22, 27, 50, 53, 73, 74, 81, 98, 105, 126, 127, 132, 151, 152, 156, 176, 183, 202, 231, 259, 287, 291, 314,

315

Skyscope Co., Inc., The, 26, 48, 77, 104, 131, 156, 185, 207, 237, 265, 294, 318 Splendors of the Sky, 18, 46, 73, 99, 126, 150, 183

Stars, 19, 46 Stars, 19, 46
Synthane Corporation, 181, 204, 235, 317
Tinsley Laboratories, 26, 48, 77, 104, 129, 155, 182, 206, 232, 259, 292, 319
Waeldin, 23, 78, 131, 179, 238, 286
Whittlesey House, 18
Wolf, David William, 23, 49, 76, 100, 131, 153, 181, 206, 235, 262, 292, 317
Young, C. C., 23, 50, 76, 104, 129, 153, 180, 207, 235, 261, 291, 316

